COSC 4346/5346

Software Requirements Specification Template

Vaq-Paq

Software Requirements Specification

Version 1.0

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Revision History

Date	Description	Author	Comments
Nov-7-16	Version 1.0	Jessie Reyna	First revision

Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

Signature	Printed Name	Title	Date
	Jessie Reyna	Project Manager	Nov – 19 - 2016
	MK Quweider	Instructor, CptS 322	

Table of Contents

1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification SRS is to give a detailed description and use of services and the functionality of the Vaq-Paq, which is a piece of Software for UTRGV. This document is to serve as a manual for the clients, developers, and other stakeholders.

1.2 Scope

This piece of Software(s), libraries, and packages are for the Vaq-Pac – including all its services and implementations. The software will provide a GUI (Graphical User Interface) for the clients to interact with and to deploy underlying services the software provides. Services include: file formatting (pdf, html and xml), DBMS (Database Management Service) - for storing said files, University Information (such as courses, program of studies, and transcripts). It will also implement network to provide said software to connect to the DBMS with login access to a personal account. Networking for email .

1.3 Definitions, Acronyms, and Abbreviations

XML	– Extensible Markup Language
TXT	– File to save simple text characters
SRS	– Software Requirements Specification
PDF	– Portable Document File

POS	– Program of Study
IDE	– Interactive Development Environment
Java	– OOP language used to implement said software
JavaFX	– GUI views for Java
MySQL	– Local Database
HTML	– Hypertext Markup Language
GUI	– Graphical User Interface
SRS	– Software Requirement Specification.
EventHandlers	– Reading user inputs into the software.
OS	– Operating System
Vaq-Paq	– This Piece of Software
DBMS	– Database Management Systems
UTRGV	– University of Texas at Rio Grande Valley
XSL	– language for expressing style sheets
Network	– Transfer of data between Database and Vaq-Paq

1.4 References

Netbeans - https://netbeans.org/

MySQL - https://www.mysql.com/

Github – https://www.github.com/

JavaFX - http://docs.oracle.com/javase/8/javase-clienttechnologies.htm

1.5 Overview

The sections are divided into 3 categories – General Description, Requirements, and Analysis.

2. General Description

2.1 Product Perspective

The software will have a friendly GUI that the client interacts with to view courses and POS for UTRGV. It will store the data on a Database and connect with it through a secure network. The data will be course, transcript, POS files which will be in PDF, XML, and HTML formats – these files can be generated on the fly in the software as a service.

2.2 Product Functions

- User Friendly GUI
    - Log in securely with username and password
    - View entire list of courses in the Computer Science Program of Study
    - Select courses to view course descriptions and other pertinent information.
    - Enter courses and grades to calculate present and future GPA
    - View department and faculty information
    - Set reminders with time and date
- Database Connection
    - Store XML
    - Temp HTML storage
    - Temp PDF files

    - User Information Storage
    - Confirmation of Username and Password
- Network Connection
    - Email a member of the faculty.
- Services
    - File Conversion
    - File Manipulation
    - Generate an HTML object of all Computer Science Program of Study courses.
    - Generate a PDF object of selected courses with course description and syllabus information.
    - Generate printable, distributable PDF files of the objects.

2.3 User Characteristics

The user should be able to read and write Course, Faculty, Transcript information. Also, basic understanding of computer interfaces and hardware – i.e. button controls and mouse w/ keyboard.

2.4 General Constraints

- JavaFX for GUI
- MySQL for Database
- XML to hold data
- Github for Version Control

- VaqPack must be developed using the NetBeans IDE.

2.5 Assumptions and Dependencies

- VaqPack will run on a system with an operating system that has a compatible Java Virtual Machine and up to date Java Runtime Environment.
- VaqPack will run on or connect to a system with an existing MySQL server.
- In the event of remote MySQL server connectivity, the system on which VaqPack will run has the networking capabilities to connect to said database server.
- User has a UTRGV email with Username and password
- User is familiar with XML and HTML structures

3. Specific Requirements

3.1 External Interface Requirements

The Database will have an external interface for the maintenance of said database. If the user chooses to view a certain PDF, HTML of XML outside of the software, a browser may be viewed as an external interface, but isn't necessary.

3.1.1 User Interfaces

1. **User Interface:** Each part of the user interface intends to be as user friendly as possible. VaqPack provides a GUI for the user to interface with all the functionality necessary to accomplish the user's goals in a visual manner. When the user opens VaqPack, if they are a new user, they will be prompted to register a username and password for future logins. Then, the user will be able to view and navigate through different tabs to view course descriptions, faculty and department information, course management, and e-mail.
2. **Admin Interface:** The administrator will be able to log in and manage the database, as well as back-up and restore content, create and manage security configurations, and tune system performance.

3.1.2 Hardware Interfaces

- **Windows**
  - Windows 10 (8u51 and above)
  - Windows 8.x (Desktop)
  - Windows 7 SP1
  - RAM: 128 MB
  - Disk space: 124 MB for JRE; 2 MB for Java Update
  - Processor: Minimum Pentium 2 266 MHz processor
- **Mac OS X**
  - Intel-based Mac running Mac OS X 10.8.3+, 10.9+
  - Administrator privileges for installation
  - 64-bit browser
- **Other Specs**
  - Since VaqPack has e-mail abilities, the hardware shall require to connect to the internet via some medium, e.g. Modem, WAN – LAN, Ethernet Cross-Cable.
  - Client Side: Java and the most minimum requirements for the home PC, MAC, and small consumer computers will suffice.
  - Server Side: Sufficient RAM and Storage.
  - Network: Network Connection.

3.1.3 Software Interfaces

- Database Server (MySQL) – Operating System (any)
- Client Application – Vaq-Paq GUI.
- Java Runtime – Run program/JAR.

3.1.4 Communications Interfaces

Client will be using HTTP/HTTPS and the GUI, but the connectivity will all be achieved within the Vaq-Paq.

3.2 Functional Requirements

- User Friendly GUI
  - Software will have all the needed controls to operate the included functions.
  - GUI will have initiate network and database functions w/out without the client noticing.
- Database Connection
  - The DB will have a connection to the Vaq-Paq.
  - The DBMS will be able to modify, insert, and delete records.
  - The DB will have attributes that will make accessing it viable.
- Network Connection
  - The network will connect to the Vaq-Paq.
  - The network will connect to the DB.
  - The network will be secure.
  - Email connections
- Services
  - The file conversion will operate decupled from all other components of the VaqPaq.

- The file conversion will be fast – 2 to 3 seconds is the limit.
- The file conversion will convert XML to HTML and HTML to PDF o The file conversion will send the output files into the database for storage.
- File Manipulation
- File manipulation will be able to merge documents together.

3.2.1 User Friendly GUI

Purpose	To assist the user in handling Events and using internal functions.
Inputs	Button clicks and Text inputs.
Processing	Use of EventHandlers to bring to the forefront of the GUI the users desired results by
	starting internal functions.
Outputs	Starting network transfer to database, converting/merging files, or displaying other GUI components.
Error Handling	Account for chaotic button clicks (threads) and invalid user input (try catch).

3.2.2 Database connection

Purpose	To store persistent data across application runs.
Inputs	Records – user info, courses, and POS.
Processing	Saving tuples into a table.
Outputs	Send info to the GUI.
Error	Tell GUI data cannot be inserted, deleted, or modified (try catch).

Handling	

3.2.3 Network connection

Purpose	To send data between application and DB server.
Inputs	Packets.
Processing	Through sockets.
Outputs	Connection established.
Error Handling	Send error to GUI to be seen be the user (try-catch that the connection was not established, lost or not secure).

3.2.4 Services

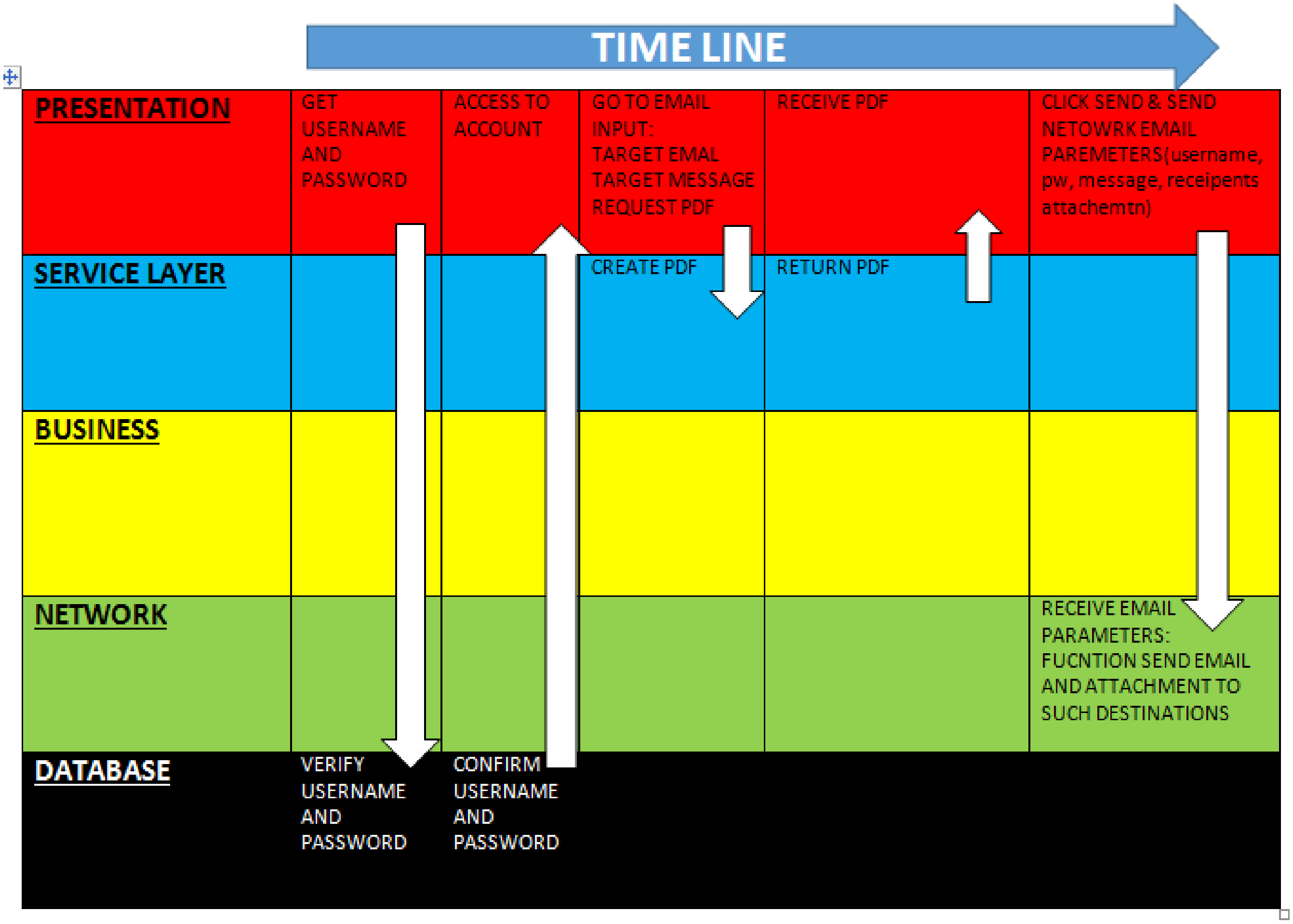
Purpose	To convert files for user's viewing, storage or manipulation.
Inputs	Files: XML, XSL, HTML, and PDF
Processing	Converts (Factory Libraries) to output desired file.
Outputs	Another file in a different format or a merged one.
Error Handling	File cannot be manipulated (try-catch)

3.3 Use Cases

3.3.1 Email

- Goal: Allow user to email course selection to desired target with PDF attachment of such course selection. This also includes a Carbon Copy, Subject Line, and Text Message. User's UTRGV.edu Email smtphost will be utilized for sending email message and attachment.

- Input:
    - Email password,
    - To (who is being)
    - Subject
    - Text message
- Main Scenario: User desired to email Courses to a target audience.
- Pre-Condition: VaqPack must be running.



PRESENTATION	GET USERNAME AND PASSWORD	ACCESS TO ACCOUNT	GO TO EMAIL INPUT: TARGET EMAL TARGET MESSAGE REQUEST PDF	RECEIVE PDF	CLICK SEND & SEND NETOWRK EMAIL PAREMETERS(username, pw, message, receipents attachemtn)
SERVICE LAYER			CREATE PDF	RETURN PDF	
BUSINESS					
NETWORK					RECEIVE EMAIL PARAMETERS: FUCNTION SEND EMAIL AND ATTACHMENT TO SUCH DESTINATIONS
DATABASE	VERIFY USERNAME AND PASSWORD	CONFIRM USERNAME AND PASSWORD			

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3.3.2 Generate XML

- Input:
- Main Scenario
- Pre-Condition

3.4 Classes / Objects

3.4.1 cMail

3.4.1.1 Attributes

- private String smtpHost
- private String port

3.4.1.2 Functions

- sendEmail

3.4.2 XMLGen

3.4.2.1 Attributes

- private String [] NodeName
- private String [] NodeText
- private ArrayList<String> NodeNameList
- private ArrayList<String> NodeTextList
- private String newfilename;

3.4.2.2 Functions

- private generateWithArraylist
- private generateWithArrays
- public generateXMLWithArrayList
- public generateXMLWithArrays

3.5 Non-Functional Requirements

3.5.1 Performance

All functions should not take more than a few seconds. Network connections is at the whim of Client’s own internet connection.

3.5.2 Reliability

The software should not crash.

3.5.3 Availability

The software should be available 24/7 on local host machine and when an internet connection can be connected, it should be able to connect.

3.5.4 Security

Secure connection w/ a secure DB server. Email Password is not stored in DB, and should be prompted by GUI.

3.5.5 Maintainability

The Admin will oversee maintenance of the server and the application should require little to no maintenance.

3.5.6 Portability

Software will run on desktop like machine, but can be ran on other if the other machines have Java.

3.6 Inverse Requirements

User may Email from different UTRGV.edu email address.

3.7 Design Constraints

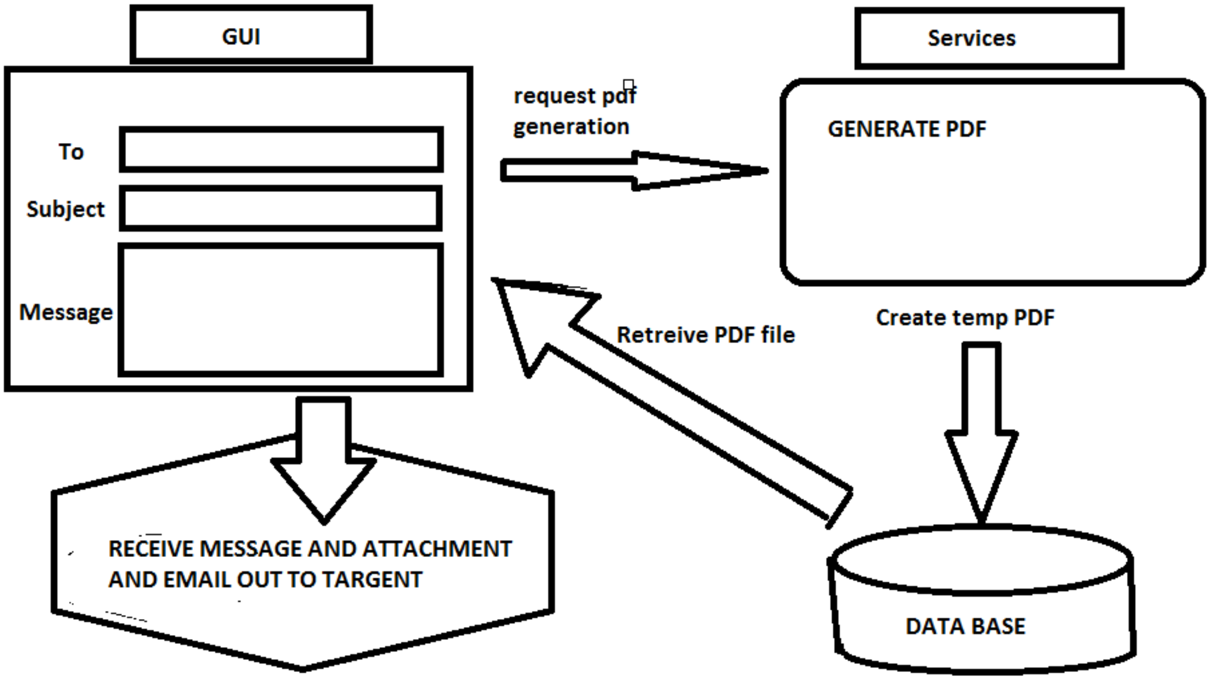
N/A currently

3.9 Other Requirements

N/A.

4. Analysis Models

4.1 Sequence Diagrams



4.3 Data Flow Diagrams (DFD)

4.2 State-Transition Diagrams (STD)

5. Change Management Process

Changes can be made by any on the developer teams. But to commit the change to the final SRS, you must seek approval from Instructor.

A. Appendices

Appendices may be used to provide additional (and hopefully helpful) information. If present, the SRS should explicitly state whether the information contained within an appendix is to be considered as a part of the SRS's overall set of requirements.

Example Appendices could include (initial) conceptual documents for the software project, marketing materials, minutes of meetings with the customer(s), etc.

A.1 Appendix 1

A.2 Appendix 2